Weldon Spring Site Achieves Milestone Utilizing Novel GPS

On June 3, 2001, the last of the contaminated material from the Weldon Spring Site Quarry water treatment plant demolition and other miscellaneous areas was placed into the on-site disposal cell marking a significant milestone in project history. This milestone was achieved during the last stage of cell construction and would not have been as easily accomplished without the use of a novel application of the Global Positioning System (GPS).

GPS is a well known and utilized system that uses strategically placed navigational satellites to precisely determine locations on the earth's surface. Weldon Spring Site has been using GPS for surveying purposes for many years, but not until this spring has a system been developed that can utilize the real time capabilities of GPS to control the operation of earth moving equipment. This system is so new that the Weldon Spring Site received the first four equipment mounted units developed.

This system is unique because it mounts GPS transceivers directly on top of the blade of the earth moving equipment. Information on the location of the on-board transceiver is relayed from the base station in the engineering office five times every second, and the equipment operator views this information on an on-board computer. The computer then continuously controls the position of the blade, and the operator steers the equipment to the identified location on the screen that needs scraping or filling. The system can be used in both this automatic mode or manually and is accurate to within one inch of the actual location. The system is also tied into portable units on workers to determine locations in areas unsuitable for large earth moving equipment

The key advantage of this system is that it eliminates the need for a surveying crew to stake out the work area elevations prior to using the earth moving equipment. Because the cell design information has been downloaded into the GPS software, the earth moving equipment can begin immediately grading the cell layers, and this significantly reduces the time to build each layer of the cap. ■

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